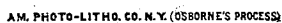


N^o 716.

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UNITED STATES PATENT OFFICE.

HENRY BARNES, OF MUNSON TOWNSHIP, OHIO.

MACHINE FOR MORTISING AND TENONING TIMBER, &c.

Specification of Letters Patent No. 716, dated April 28, 1838.

To all whom it may concern:

Be it known that I, HENRY BARNES, of Munson township, Geauga county, State of Ohio, have invented a new and useful Improvement in Machines for Mortising and Tenoning Timber, which is described as follows, reference being had to the annexed drawings of the same, making part of this specification.

10 This machine consists of a suitable frame, marked A, Figure 1, in the annexed drawings Fig. 1, of suitable size and strength to contain and support the parts hereafter described. As the frame may be varied in size
15 and proportion, according to the purpose intended, it need not be more particularly described. In the center of the frame, on top, use two perpendicular cheeks B, B, one on each side, of proper size and strength, mortised and tenoned into the caps of the frame,
20 between which the cutting tools work up and down.

On top of the frame are two pairs of parallel ways C', C', C, C, over which two
25 carriages D', D, move—one containing the timber to be mortised and the other the timber to be tenoned.

The carriage D' for the timber to be mortised is composed of three parallel timbers
30 placed at such distances apart united by cross timbers, as to form two parallel channels the whole length of the carriage; in which channels the clamp bolts E are placed that secure the rests F to the carriage—
35 each of said rests being turned at right angles at the bottom and perforated with an oblong slot in which the clamp bolt moves to allow the rests to be moved to the right or left and clamped at any place required.
40 The top of each rest is bent in like manner at right angles and perforated with a similar oblong slot, in which is placed a clamp bolt that secures a longitudinal bar H on top of said rests, which may be moved to the
45 right or left and clamped at any position desired. To this bar is secured the piece of timber to be mortised by means of clamps I moving on said bar and set at any desired point by thumb screws J. In the other
50 channel of this carriage are placed clamp bolts passing through guides K which are movable longitudinally for holding the timber against the bar. On one side of the carriage is a rack L Fig. 6 into which works
55 a pinion M on a horizontal shaft N lying

across the frame having on its outer end a grooved pulley O attached to the shaft N by a spring P passing at right angles through said shaft—its extremities being embraced by staples Q inserted into the face of said
60 pulley. A band R passing from this pulley to a small pulley S on the crank shaft T. The other carriage D for holding the timber to be tenoned is made in a similar manner to that above described for mortising, except that it is not as long.

The cutting tools are arranged and work in the following manner.—At the head of the cheeks, and turning in boxes, is a crank shaft T turned by means of a treadle U at
70 the bottom of the frame connected with the crank V on the end of said shaft by a pitman rod W at the side of the frame. To one of the cranks of this crank shaft is attached a shackle-bar X to which is attached a vertically moving slide Y Figs. 1 and 7 having
75 on its face projections Z perforated with round apertures through which passes a round stem on shaft *a* Figs. 1 and 2 whose lower end is enlarged, or formed into a head
80 *b* in which is formed a socket to admit the shank of the cutting tool *c* which is secured therein by a small thumb screw *d*. The stem is held up by a lever *e* inserted into it near its upper end resting upon the end of a
85 notched plate *f* Figs. 1 and 7 in one of the projections of the sliding plate—said lever serving to turn the stem or shaft around so as to reverse the position of the cutting tool or chisel.

The slide to which the cutting tool is attached moves vertically in grooves formed by two parallel vertical plates *g g* fastened to two horizontal plates *h h* attached to two horizontal bars *i i* formed between the
95 cheeks, by means of clamp bolts *k k* placed in oblong slots in said horizontal plates so that they can be moved to the right or left as desired so as to shift the position of the cutting tool as required.

The tool *c* for mortising is similar to a common chisel.—See Fig. 2. On the end of the crank shaft is a fly wheel *l*. To one of the cheeks and one of the cross timbers is fastened a frame *m* through which passes a
105 pin *n* for holding down the timber to be mortised. Also a stop *p* to prevent the carriage running too far.

The slide, bar, &c., for tenoning are the same as that for mortising just described—
110

the only thing changed is the cutting tool *q* which is similar to that represented at Fig. 3.

The pinions *M* are thrown out of gear with the racks *L* by means of a wedge *r* 5 Figs. 1 and 4 forced between the pulley *o* on the end of the pinion shaft and the outside of the frame—said wedge being fastened on the end of a lever *s* extending across the frame, turning on a bar or pins *x* as its 10 fulcrum placed about the center of the frame.

Below the tenoning tool and fastened to the frame is a stop *t* Figs. 3 and 8 to prevent the tenoning carriage running too far 15 back.

Operation: The timber, or stuff, to be mortised being secured to the longitudinal bar *H* of the carriage by means of the clamps *I* and guide *K* the operator works the treadle 20 *U* with his foot—this turns the crank shaft *T* which works the cutting tool up and down the fly wheel *e* regulating the motion—at the same time the carriage *D'* is advanced with the stuff to be mortised by means of 25 the band *R* passing around a pulley *S* on the crank shaft leading to the pulley *O* on the pinion shaft *N* which it turns with the pinions *M* and one of these meshing into the rack of the carriage *D'* causes it to advance. 30 The cutting tool may begin its work at either end of the intended mortise; but when it commences to cut at the end farthest from the cutting tool the lever *e* in the stern or shaft *a* must be turned to the right and 35 when it begins at the other end the position of the lever must be changed to the left which reverses the position of the edge of the cutting tool. The motion of the carriage being arrested for a few moments by the 40 entering of the cutting tool into the stuff fastened thereon and the band around the pulleys remaining tight it becomes necessary to have the pulley *O* on the pinion shaft to turn on said shaft until the chisel again rises 45 from the stuff: this is effected by having the connection of said pulley to said shaft accomplished through the agency of the spring *P* which yields while the carriage is arrested, and which returns to its former position as 50 soon as the cutting tool rises, when the carriage again advances. As soon as the mor-

tise is cut the required length the motion of the machine is stopped.

The end of the lever *s* toward the treadle is depressed which raises the other end with 55 the wedge *r* thereon, forcing said wedge between the pulley and frame causing the pulley to recede from the frame and draw with it the pinion shaft and pinions—the latter being thrown out of gear with the 60 racks. The carriage is then drawn back by hand. The pinions are again put in gear by depressing the wedge and drawing back the pinion shaft either by weights, spring, or hand. The position of the timber or stuff 65 is changed for another mortise, or another piece of stuff put in its place and the operation repeated as before.

The rest or support *F* of carriage *D* differs from the rest of carriage *D'* inasmuch 70 as after being turned at right angles at top it is again turned up at right angles—the oblong mortise or slot being made sufficiently long for the play of the bolt to which the bar *H* is attached. See Fig. 5. 75

In order to cut a tenon the stuff must be secured to the other carriage *D*,—the slide *Y* and shackle bar *X* shifted to the crank *w* over said carriage and the mortising tool removed and one adapted for cutting the 80 tenon such as Fig. 3 secured in its place. The operation will be similar to that above described for cutting the mortise.

What I claim as my invention and which I desire to secure by Letters Patent con- 85 sists—

1. In the construction of the carriages with the rests, bar, clamps, and clamp-bolts—as before described.

2. The arrangement of the lever and 90 wedge for throwing the pinions out of gear with the racks as before described.

The method of connecting the pulley with the pinion shaft by the spring for allowing the pulley to turn on the shaft as the 95 cutting tool enters the wood as before described.

HENRY BARNES.

Witnesses:

WM. P. ELLIOT,
EDMUND MAHER.